

FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-5295
FACILITY NAME ALMIRA WWTP

SUMMARY

The Town of Almira is a small agricultural community located in northwest Lincoln County along the Grant County line (Figure 1). The town's population has remained relatively stable from 1900 until 2000 at approximately 400 persons; since then the population has dropped to 270. Almira has a school with a student population of approximately 70 students. Local economy is based on dry land wheat farming and minor retail sales. There are no manufacturing industries or large commercial businesses.

Since the system was upgraded in 1982 the town has been serviced by about three miles of sewer main and facultative lagoons that discharge to a submerged drainfield. The system is designed for a population of 500 with a flow of 100 gallons per day per capita. The town has historically experienced Infiltration & Inflow problems during periods of high volume run-off.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. **ST-5295**. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Spokane Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. Changes to the permit will be addressed in Appendix C--Response to Comments

<u>GENERAL INFORMATION</u>	
Applicant	Town of Almira
Facility Name and Address	Almira WWTP, PO Box 215, Almira, WA 99013
Type of Treatment System:	Facultative lagoons; infiltration via submerged drainfield.
Discharge Location	Latitude: 47° 42' 36" N Longitude: 118° 56' 05" W.
Legal Description of Application Area	N ½, NE ¼, Section 33; Township 26 N; Range 31 EWM. Latitude: 47° 42' 36" N. Longitude: 118° 56' 05" W.
Contact at Facility	Name: Darrell Francis Telephone #: 509-639-2601
Responsible Official	Name: Einar Larson Title: Mayor Address: PO Box 215, Almira, WA 99103 Telephone #: 509-639-2601 FAX # 509-639-2508

BACKGROUND INFORMATION

DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

HISTORY

The present municipal wastewater treatment facility was constructed in 1982. It is comprised of two lined facultative lagoons that discharge to a submerged drainfield system for infiltration (Figure 2). The present plant was built to replace a trickling filter plant constructed in 1949. The trickling filter plant discharged to Corbett Draw, an intermittent drainage swale that feeds Wilson Creek. The 1949 plant was replaced because it was in need of repair and was subject to yearly flooding.

COLLECTION SYSTEM STATUS

The town is serviced by approximately 14,700 feet of 8" and 10" sewer mains connected to a 6" main leading to the facultative lagoons at the treatment site. Prior to the construction of the current treatment facility in 1982 an I/I study was conducted indicating that about 40% of the annual sewage flow was caused by infiltration and inflow. Consequently, the sewage plant upgrade included rehabilitation of about 6500 lineal feet of the 8" and 10" lines. Alternating sections of the sewer lines are routinely cleaned every other year.

TREATMENT PROCESSES

Wastewater is collected in the Almira sewer and transported via gravity interceptor to a pump station containing two alternating sewage pumps. Sewage flow to the lagoons is calculated from the pump hour meters. The pump station has an emergency diesel generator and a dual alarm system.

The raw sewage is pumped through a six-inch diameter force main to the treatment plant, into either cell number 1 or cell number 2. The lagoons are usually run in series, with influent going into cell number 1, then by gravity into cell number 2. Retention time in the treatment cells is approximately 180 days. Treated sewage from Cell 2 flows by gravity into a concrete dosing tank and then into the drainfield system. According to the current Operation and Maintenance Manual, under normal operation, when the volume within the dosing tank reaches 1200 gallons, a float-activated release mechanism releases the effluent into the drainfield system. The number of doses are counted by a dose counter installed at the dosing tank. Distribution piping within the drainfield system is arranged for dosing to three disposal areas.

Plant design values from the 1978 Facilities Plan and the 1982 O & M manual are as follows:

Max. monthly influent flow:	0.063 mgd
Max. hourly influent flow:	0.158 mgd
Influent BOD:	100 lbs/day
Influent TSS:	200 lbs/day

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Design population:	500
Lagoon number 1	2.0 acres
Lagoon number 2	2.0 acres
Max. storage	16 acre-ft (4 months)

RESIDUAL SOLIDS

Solids disposal is generally only required when sludge is removed from either of the lagoons. The current O & M Manual states the sludge should be removed if and when solids levels in the lagoons exceed 0.7 feet. There is no approved Sludge Management Plan at this time. A plan will not be required until it becomes necessary to remove the solids from the lagoons. Solids removed from the lagoons will be treated and disposed of as described in the Residual Solids Handling section below.

GROUND WATER

A hydrogeological study was conducted at the treatment plant location during the previous permit cycle. Three ground water monitoring wells were installed in the overburden in locations projected to be up-gradient and down-gradient of the wastewater treatment plant infiltration area during January of 2002. Wells, MW-1 and MW-2, projected to be down gradient were drilled through the overlying silt, sand and gravel until penetrating underlying basalt at depths of 38.9 feet at each location. Sea level elevations of the underlying basalt are approximately 1884 feet and 1890 feet respectively. Monitor well, MW-3 was drilled 46.5 feet to a bottom hole elevation of 1888' Mean Sea Level.

MW-3 did not encounter basalt, and it is the only well of the three to develop enough ground water to produce a ground water sample viable for analysis, although that condition did not exist throughout all sampling events. Initially, ground water depth in MW-3 was established at 37.14 feet below the top of the casing at an elevation of about 1897.5 feet MSL. A subsequent monitoring event, January 7, 2003 found MW-3 to be dry, probably a seasonal feature during a below average precipitation year. Ground water was again intercepted in the well in March, 2003 at a depth of approximately 35 feet below the top of the casing. When monitoring was conducted January 27, 2004 MW-3 was dry.

Quarterly ground water monitoring continued from January 2002 through January 2004, however, at no time was ground water found in wells MW-1 and MW-2 in sufficient volume to obtain a water sample viable for analysis. Although, minor ground water was found perched above the basalt, an unconfined aquifer was not developed.

PERMIT STATUS

The previous permit for this facility was issued on June 26, 2000.

An application for permit renewal was submitted to the Department on November 20, 2003 and accepted by the Department on December 12, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received a compliance inspection without sampling on August 27, 2003. The inspection showed that the facility is generally well maintained.

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. Based on information provided in the permit application and DMR data submitted from December 2001 through March of 2004, the proposed wastewater discharge prior to infiltration is characterized for the following parameters:

Table 1: Wastewater Characterization

Parameter	Concentration		
	Min.	Max.	Average
BOD (5 day)	5	42	18
TSS	2	70	21.9
TDS	358	786	846.0
Ammonia-N	.29	1.04	1.22
Fecal Coliform	2	TNTC *	>63
Nitrate -N	.09	.7	.2
Total Kjeldahl N	.15	11.6	6.2

*TNTC is reported only during the month of December during each year of the permit cycle.

Average flows for the period of January 2000 through December 2003 ranged from a low of 20,000 gallons per day to a high of 106,000 gallons per day. The four year average flow is approximately 58,000 gallons per day.

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, Chapter 173-221 WAC, and Chapter 173-240 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drainfield that have been determined to protect the quality of the ground water. The approved

engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

The 1978 Facility Plan and the 1982 O & M Manual contain the following plant design values:

Maximum monthly influent flow	-	.063 mgd
Maximum hourly influent flow	-	.158 mgd
Influent BOD ₅	-	.5 mg/l
Influent TSS	-	1 mg/l

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

Table 2: Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units

Toxics

No toxics in toxic amounts

Because a ground water characterization conducted at the site did not develop an unconfined aquifer above the underlying fractured basalt the Department is unable to determine if background ground water quality is either higher or lower than the criteria listed in Chapter 173-200 WAC. Effluent monitoring data indicates that wastewater discharged to the drainfield will have limited potential to exceed Ground Water Quality Criteria. Therefore, it has been decided that no ground water enforcement limits other than the ground water criteria will be put in this permit.

No valid upgradient groundwater data were available for list pollutants.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED JUNE 26, 2000

Table 3: Comparison of Previous and New Limits

Parameter	Existing Limits	Proposed Limits
Effluent flow	100,000 GPD*	100,000 GPD*
pH	6.0 – 9.0	6.0 – 9.0

*Monthly average discharged from the treatment cell to the drainfield cell.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

INFLUENT AND EFFLUENT MONITORING

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, the cost of monitoring, and Ecology's ground water implementation guidance.

Influent sampling is done at the diversion box prior to discharge to the lagoons. Effluent monitoring is conducted at the dosing chamber prior to discharge to the submerged drainfield.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

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FACILITY LOADING

The design criteria for this treatment facility are taken from the 1978 Facilities Plan prepared by Horton Dennis & Associates, Inc., and are as follows:

Monthly average flow (max. month):	0.063 mgd
Instantaneous peak flow:	.13 mgd
BOD influent loading:	100 lbs/day
TSS influent loading:	200 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant (WAC 173-216-110[4]). The Permittee is required to submit an engineering report when the plant reaches 85% of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report (WAC 173-216-110[5]). The permit requires the Permittee to submit reports comparing the actual flow and waste loadings to the design criteria for the plant twice during the permit cycle; January 15, 2002 and with Application for renewal.

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water pollution the Permittee is required in permit condition S6. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the local health district.

PRETREATMENT

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Horton Dennis & Associates, February 1982. Operation and Maintenance Manual for Town of Almira Sanitary Sewer System, Lincoln County, Washington

Horton Dennis, and Associates, Inc., 1978. Town of Almira Sewage Treatment Improvements, Facilities Plan.

Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.

Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on June 19 and June 26, 2003 in the Wilbur Register to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

This permit was written by R. Wayne Peterson.

APPENDIX B--GLOSSARY

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.